

(No Model.)

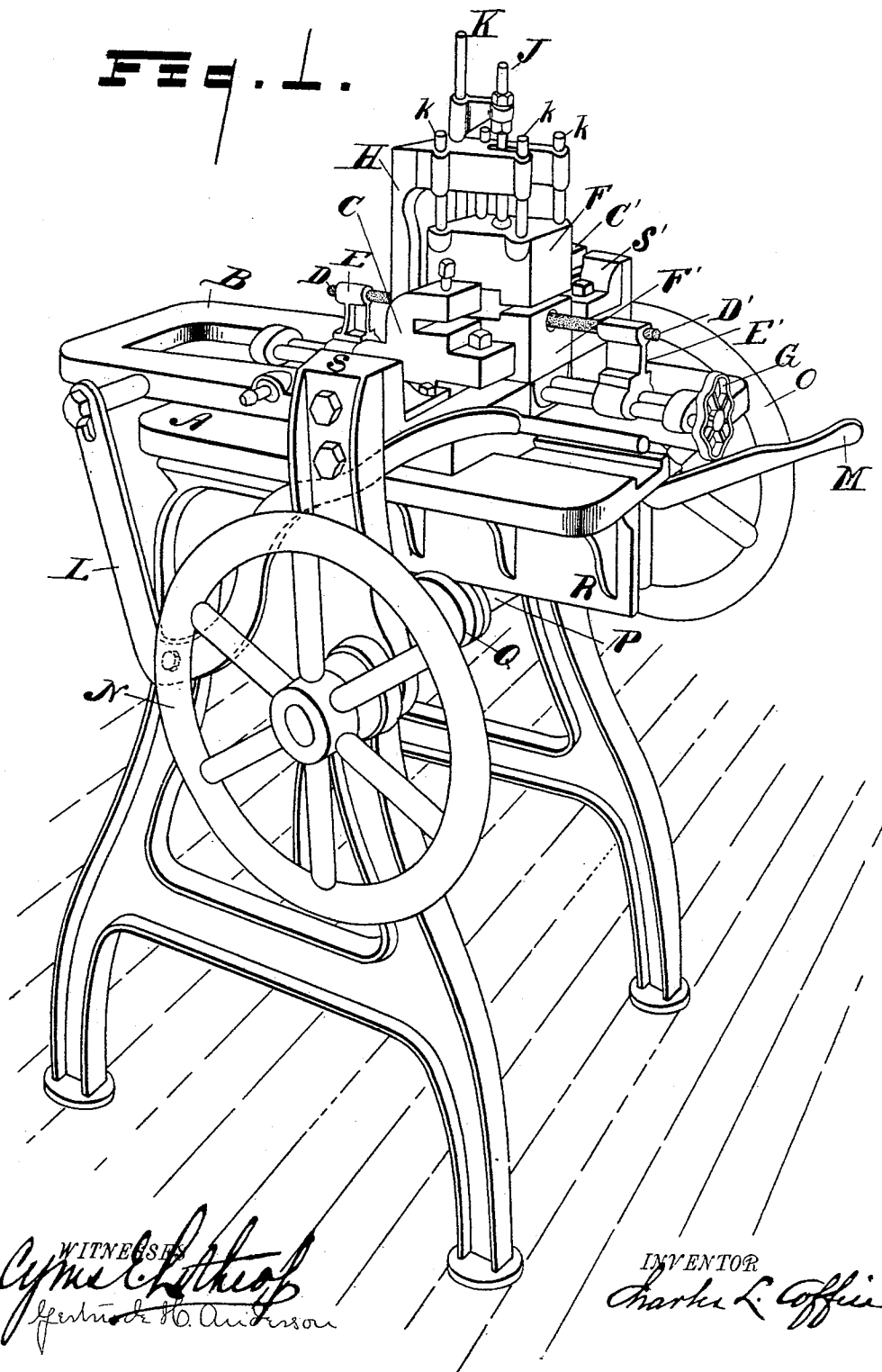
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C. L. COFFIN.

MACHINE FOR ELECTRICALLY WELDING METALS.

No. 495,394.

Patented Apr. 11, 1893.



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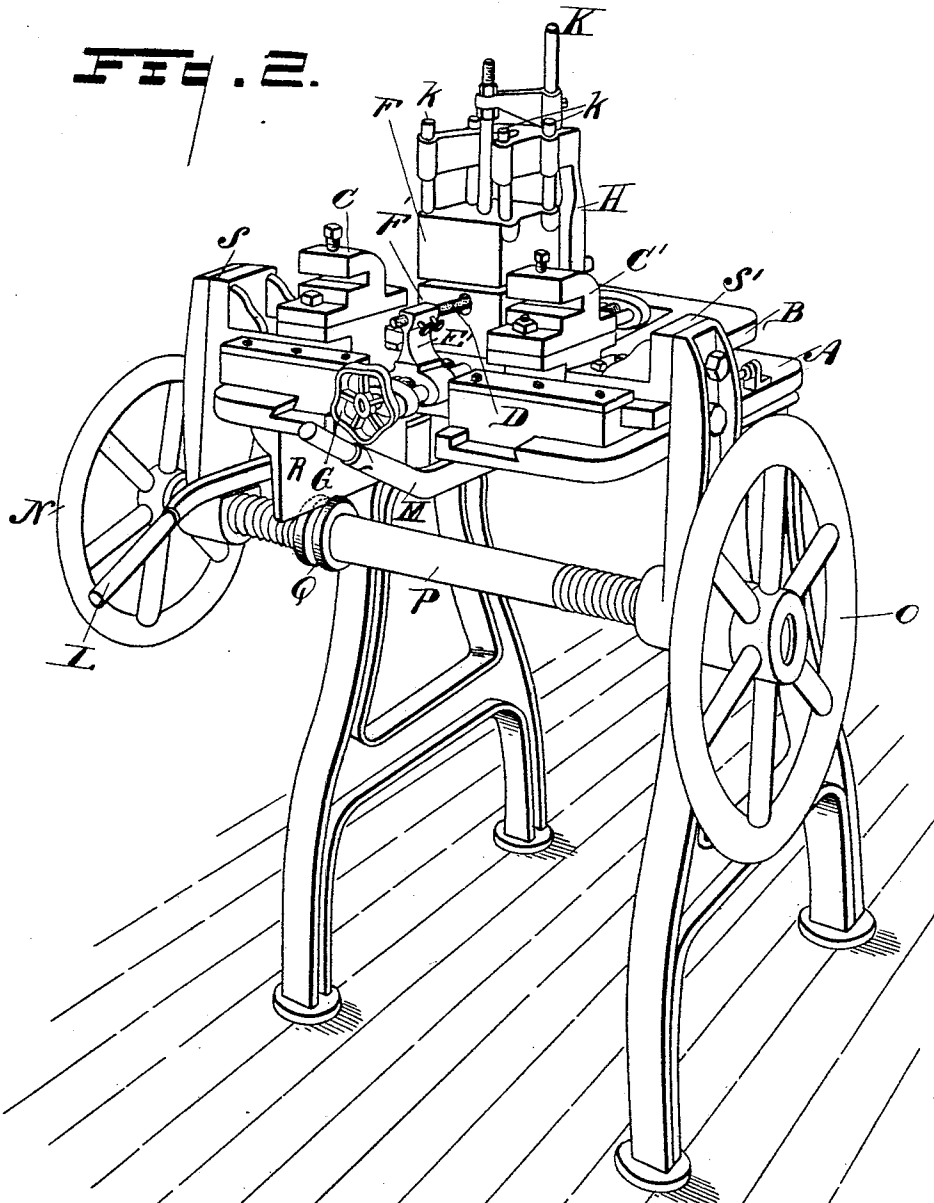
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WITNESSES

Samuel E. Thomas
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(No Model.)

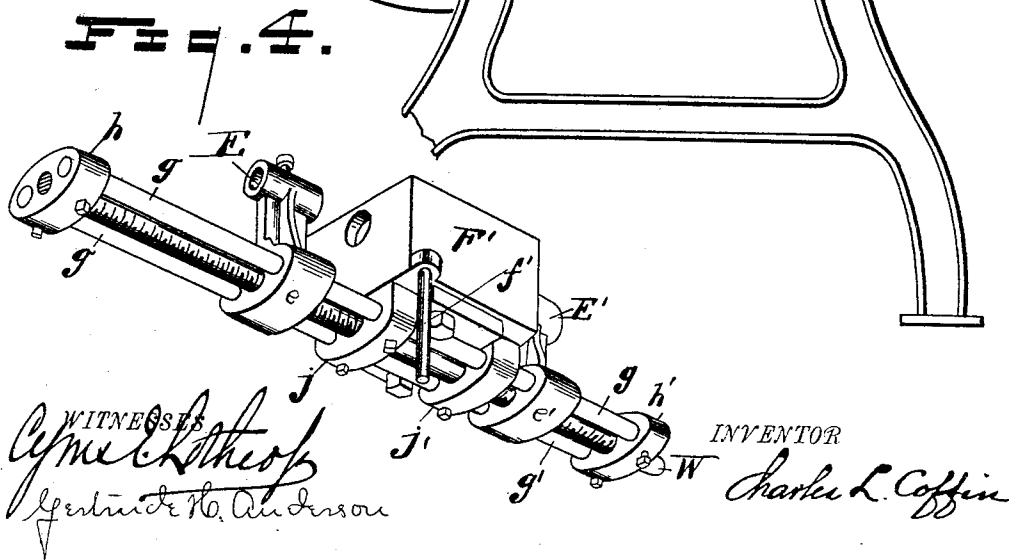
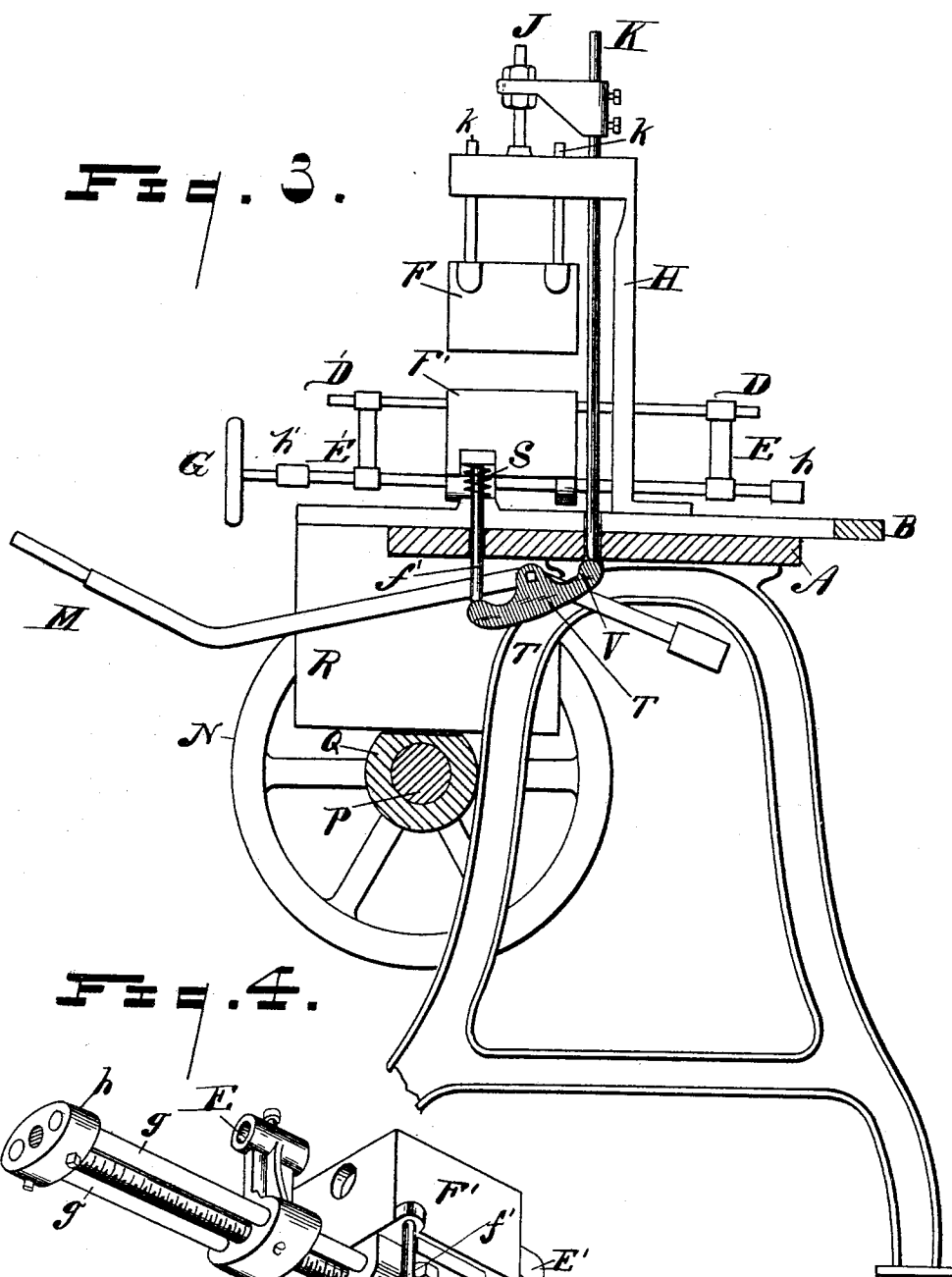
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UNITED STATES PATENT OFFICE.

CHARLES L. COFFIN, OF DETROIT, MICHIGAN.

MACHINE FOR ELECTRICALLY WELDING METALS.

SPECIFICATION forming part of Letters Patent No. 495,394, dated April 11, 1893.

Application filed August 6, 1892. Serial No. 442,336. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. COFFIN, of Detroit, in the county of Wayne and State of Michigan, have invented a new and useful
5 Improvement in Machines for Electrically Welding Metals, of which the following is a specification.

My invention consists in an improved machine for electrically welding metals, herein-
10 after fully described and claimed.

Figures 1 and 2 are perspectives of the complete machine. Fig. 3 is a side elevation with the table in section and one clamp in position, and Fig. 4 is a perspective of the arc
15 regulating device, and one-half of the furnace.

In general features the machine is not unlike that shown in my application filed June 11, 1891, Serial No. 395,906.

A represents a table supported on suitable
20 legs.

B represents a yoke which is provided with dove-tail lugs which slide in dove-tail grooves in table A, as clearly shown in Figs. 1 and 2.

C C' represent two clamps, each of which
25 is held in a way in yoke B so as to be capable of motion in and across said yoke.

S and S' represent two brackets which are bolted to clamps C and C' respectively, and which extend downward and at their lower
30 ends have screw-threaded holes, in which lies a shaft P, which is screw-threaded at each end, one end having a right hand and the other a left hand screw-thread.

Q represents a grooved collar rigidly secured
35 on shaft P, and R represents a lug on the bottom of table A, whose lower edge projects into the groove on collar Q, and prevents shaft P from shifting endwise, while permitting it to move freely with the movements of yoke B.

F and F' represent two parts of a furnace,
40 being two boxes of, or lined with refractory material adapted to close together, and provided on their sides adjacent to clamps C C' with openings as shown in Fig. 1, to permit
45 the insertion of the articles to be heated.

V represents a double cam or lever which is rigidly secured to a shaft T journaled in the frame of the machine, and M represents a counter-weighted lever also secured to said
50 shaft T, by which the double lever or cam V can be actuated.

f' represents a rod playing through an open-

ing in table A, one end of which rests on one end of cam or lever V, while the other end engages with the lower half F' of the furnace, 55 and is preferably provided with a spring buffer f' to guard against shock. K represents another rod passing through table A, and also passing through the head of a bracket H which is secured to said table in rear of said 60 furnace. One end of rod K rests upon the other end of cam or lever V, while the other end is connected by means of a cross-head and pin J with the upper half F' of the furnace and moves said upper half of the furnace 55 up and down when rod K is raised or lowered.

k represents four guide rods, whose lower ends are secured in the upper half F of the furnace, while their upper ends work through holes in the head of bracket H, thus guiding 70 the upper half F of the furnace in its movement.

g g, Fig. 4, represent guide rods which are secured in the half F' of the furnace by means of lugs j j', and whose outer ends are held in 75 position by means of heads h h', which are secured to and carried on said rods g g'.

E E' represent two carbon holders, whose lower ends form nuts e e', one of which is tapped with a right hand screw thread, 80 while the other is tapped with a left-hand screw thread, to engage with screw threads on shaft W, said screw threads being of different pitch, and both nuts e e' are bored to fit and slide on guide rods g g'. W represents 85 a shaft journaled in said heads h h' and lugs j j', lying between guide rods g g', and provided at one end with a hand wheel G. The ends of shaft W outside of lugs j j' are right and left hand screw threaded, the pitch of 90 one of said screw threads being about double that of the other, so that when by rotation of said shaft the nuts e e' are moved, the motion of one of said nuts will be faster than the motion of the other, so that one of the carbon 95 holders E E' carried on said nuts e e' will advance faster than the other to compensate for the greater rapidity of combustion of the positive carbon.

B B' represent two carbons carried in the 100 carbon holders E and E', and projecting into the lower half F' of the furnace, the whole mechanism last described and which is the arc regulating mechanism, being carried on

the lower half F' of the furnace, so that it is free to move with said lower half if necessary, without affecting any other part of the machine. The carbons B and B' are to be connected in any suitable manner with a generator of electricity, (not shown) for the purpose of maintaining a voltaic arc within the furnace F' F.

L represents a bell-crank lever pivoted on the frame of the machine, one of whose ends engages with yoke B, whereby said yoke may be moved forward or back.

In the operation of this machine, the articles to be welded are secured in clamps C C', two parts F F' of the furnace separated, and the article then pressed into the furnace and the two parts of the furnace closed together, the opening and closing of said furnace being accomplished by means of lever M, double cam V and the rods f' and K. A current is now passed through the carbons D and D', and said carbons are brought into contact by means of the shafts W and hand wheel G, then separated to establish a voltaic arc within the furnace by means of which the articles to be welded are rapidly heated, and when brought to a welding heat are pressed

together by rotating shaft K in such a direction as to force the two clamps C C' toward each other. The articles may be then taken out of the furnace and the weld completed, or the article or articles worked in any desired manner.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a machine for electrically heating metal, a support, a yoke movably mounted on said support, a furnace lying in the opening of said yoke, two slides mounted on ends of said yoke and movable thereon across the path of motion of said yoke, clamps mounted on said slides and a right and left threaded screw shaft connecting said slides, substantially as shown and described.

2. In a machine for electrically heating metal, a separable furnace consisting of a two part box, a rock-shaft supporting one part of the furnace, and a cam on said rock-shaft for opening and closing said furnace, substantially as shown and described.

CHARLES L. COFFIN.

Witnesses:

CYRUS E. LOTHROP,
GERTRUDE H. ANDERSON.